

No.

200300290



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Montana Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

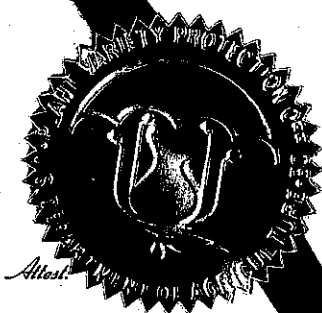
AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR PLANT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542; 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'BigSky'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this eighteenth day of February, in the year two thousand and four.



Attest:

[Signature]
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

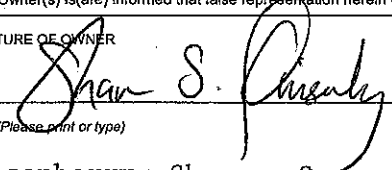
[Signature]
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Montana Agricultural Experiment Station		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME MT 9432	3. VARIETY NAME Big Sky
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 202 Linfield Hall Montana State University Bozeman, MT 59717		5. TELEPHONE (include area code) 406-994-3683	FOR OFFICIAL USE ONLY PVPO NUMBER 200300290 FILING DATE July 24, 2003
		6. FAX (include area code) 406-994-6579	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Experiment Station	8. IF INCORPORATED, GIVE STATE OF INCORPORATION	9. DATE OF INCORPORATION	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Phil L. Bruckner Plant Sciences & Plant Pathology Department Montana State University Bozeman, MT 59717			FILING AND EXAMINATION FEES: \$ 3652.00 DATE 7/18/2003 CERTIFICATION FEE: \$ 432.00 DATE 2/10/2004
11. TELEPHONE (Include area code) 406-994-5127	12. FAX (Include area code) 406-994-1848	13. E-MAIL bruckner@montana.edu	14. CROP KIND (Common Name) wheat, common
15. GENUS AND SPECIES NAME OF CROP Triticum aestivum		16. FAMILY NAME (Botanical) Triticeae	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) deposited in NSSL July 2004 (# 408401.01) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input checked="" type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input type="checkbox"/> NO (If "no", go to item 22) 20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED 21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)	
24. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF OWNER 		SIGNATURE OF OWNER	
NAME (Please print or type) Quisenberry, Sharron S.		NAME (Please print or type)	
CAPACITY OR TITLE Dean & Director COA/AES	DATE 06/12/03	CAPACITY OR TITLE	DATE

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvp.htm>

ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

21. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

U.S. 10/23/2002

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center--East, Beltsville, MD 20705. Telephone: (301) 504-8089. <http://www.ams.usda.gov/lsg/seed.htm>

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 3.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

ST-470 (02-10-2003) designed by the Plant Variety Protection Office with Word 2000. Replaces former versions of ST-470, which are obsolete.

Exhibit A**Origin & Breeding History of BigSky**

'BigSky', a hard red winter wheat (*Triticum aestivum* L.) was developed by the Montana Agricultural Experiment Station and released in September 2001. BigSky was derived from a single cross, 'Nuwest'/'Tiber', made in 1985 at Montana State University. The cultivar was developed using a modified bulk system of breeding. F₁ to F₄ generations were grown as bulk populations in Bozeman, MT from 1986 to 1989. BigSky was visually selected and bulk harvested by E.A. Hockett in 1990 as an F₄-derived F₅ headrow. BigSky was selected from the F₆ Winterhardiness Observation Nursery grown at Bozeman, Sidney, and Moccasin, MT in 1992 and the F₇ Winterhardiness Increase Nursery grown at Huntley, MT in 1993. Selection was based on uniformity, winterhardiness, estimated yield potential, grain protein, and mixograph properties. BigSky was tested as MT9432 in the Montana Preliminary Yield Nursery in 1994, the Montana Intrastate Nursery from 1995 to 2002, the Montana Off-station Nursery from 1997 to 2002, and in the Northern Regional Performance Nursery and the Western Uniform Hard Winter Wheat Nursery in 2000.

Breeder seed of BigSky was developed in 1997 and 1998 using a head row/line row purification scheme. Breeder seed of BigSky originates from a composite of 93 F₁₃ line rows selected on the basis of visual uniformity.

BigSky in an F₄ derived line. The cultivar has been shown to be true-breeding across multiple generations and environments. BigSky has been observed to be stable and uniform across multiple locations from 1994 to 2002 (nine generations). The cultivar has a low frequency (1:10,000 plants) of variant plants with red glumes at maturity.

Foundation seed of BigSky will be maintained by the Montana Agricultural Experiment Station, Montana State University, Bozeman, MT 59717.

Exhibit B**Statement of Distinctness**

BigSky is a hard red winter wheat cultivar most similar to its paternal parent, Tiber. BigSky has white glumes and chaff at maturity, whereas Tiber has red glumes and chaff at maturity. BigSky is resistant to predominant stem rust races in Montana including race TPMK, whereas Tiber is susceptible to predominant stem rust races in Montana. Raw Asian noodle color and texture properties of BigSky are superior to those of Tiber based on quality evaluation from 16 environments, as indicated by higher initial noodle brightness (L^* 0, 87.3 vs. 86.6), higher noodle brightness at 24 hours (L^* 24, 79.8 vs. 74.4), noodle score (331 vs. 309), noodle hardness before cooking (1367 vs. 1167), and noodle hardness after 5 minutes cooking (1095 vs. 954).

Supplement to Exhibit B

Table B1. Reaction of BigSky and Tiber in five single row stem rust screening trials, 1994-2002.

Year	Location	Stem rust race composition	Stem rust reaction ¹	
			BigSky	Tiber
1995	Fort Ellis	Eastern MT mixture ²	R	S
1997	Fort Ellis	Eastern MT mixture ²	R	S
1998	Fort Ellis	Eastern MT mixture ²	R	S
2001	Fort Ellis	Eastern MT mixture ²	R	S
2002	Fort Ellis	Eastern MT mixture ²	R	S

¹ R=resistant, MR=moderately resistant, MS=moderately susceptible, S=susceptible.² Mixture of races collected in eastern Montana. Mixture predominantly contains stem rust races TML and QFC.

Table B2. Reaction of entries in the 2000 Northern Regional Performance Nursery to selected isolates of stem rust. Data provided by D.V. McVey, USDA-ARS Cereal Rust Laboratory, St. Paul, MN.

		stem rust isolates							Postulated Sr genes	Adult plant reaction St. Paul, MN
		69-MN 399	98-UGA* 1	74-MN 1409	80-BRA 38A	76-IN 702C	72-MEX 53A	81-ND 838A		
Entry	Selection	QTHJ	PTHS	TPMK	TTRS	RKRQ	RTQO	RCRS		
1	Kharkof	S	S	S	S	S	S	S	None	40S
2	Roughrider	0	0	---	S	S	S	0	6,36	0
3	Abilene	2=	2=	2-	2=	2=	2-	2=	24	TR
4	Nekota	2=	2	0;	2-	2=	;1N	0	6,17,24	TR
5	Nuplains	2=2	2=	2-	2	2-	2-	2=	24	TR
6	T194	2=	2=	S	S	2-	2-	2=	+	10S
7	NE96649	2=	2=	0;	---	2-	;	0	6,17,24	0
8	NE97489	1	2=	0;	;1	2-	;	0	6,17,24,+	0
9	NE97558	2	2	0;	23	S	;	0;	6,17,+	20MS-S
10	NE97612	1	2=	2-	2=	2=	2=	0?	67,24, 31	TMS
11	NE97638	2=	2=	---	2=	2-	;	0?	67,17,24	0
12	NE97669	2=,2	2=,S	2,S	2-	2-	;	2-	17,24	0
13	NE97675	2	2=	S	S,2=	2	2-	2	Tmp	TR
14	NE97689	2=	1	0;	2=	2-	;	0	6,17,24	0
15	NI97405	0	0	X	2	2-	;	0?	36,+	0
16	MT9432	S	S	;	2C	S	S	0	6	40MS-S
17	MTW9441	S	S	0	S	S	S	0	6	10MR-MS
18	NW97S182	2CN	S	0;,S	S	S	XN	S	17,+,seg6	10MR-MS
19	NW97S218	;1N	2-,S	23	23	;	;	23	10,+	40MS-S
20	NW97S278	22-	2	0;	2,S	S	;	0	6,17,+	TMS
22	W94-480W	2	2	S	2C	S	;	S	17,+	30MS-S
23	W95-610W	2-	S	S	S	S,2	;,S	2	seg17,+	20MS-S
24	IDO537	S	2	S	S	S	0;	S	17,+	TR-MR
25	IDO539	2-	2=	---	S	2	2-	0	6,+	20S
26	SD93267	2	2-	0	S	S	2	0	6,+	40S
27	SD94149	S	S	0	;1	S	;1N	0	6,17	10MS
28	SD95203	S	S	0	;1	S	;1N	0	6,17+	5MS-S
29	SD95218	2	2-	0	23C	2-	2	0	6,+	5MS-S
30	ND9257	2=	S,2=	0;	-	S	;1N	0	6,17,+	20MR-MS
31	ND9304	2=	2-	0;	23C	S	;1	0	6,17+	10MS-S
32	ND9419	2=	2=	2=	1	2=	2=	2=	Wid	TR
33	ND9460	2-	2-	0	;1	2	;1-N	0	6,17,+	TR-MR

*98-UGA-1,PTHS, ISOLATE VIRULENT TO Sr31

*98-UGA-1,PTHS, ISOLATE VIRULENT TO Sr31

Infection types: 0 =immune, ; =nearly immune, 1 =very resistant, 2 =moderately resistant, 3 =moderately susceptible, 4 =S=susceptible.

Supplement to Exhibit B

Table B3. Means for raw Asian noodle quality traits¹ for five winter wheat cultivars grown in 16 Montana environments, 1997 to 2000².

Cultivar	Initial noodle brightness L*0	24h noodle brightness L*24	Noodle score	Noodle hardness before boiling	Noodle hardness after 5 min. boiling
Nuwest	87.3	80.2	348	1297	1029
NuSky	87.3	80.3	348	1332	1060
Neeley	87.3	80.1	334	1285	1003
BigSky	87.3	79.8	331	1367	1095
Tiber	86.6	74.4	309	1167	954
LSD (5%)	0.4	4.7	13	59	46

¹ Methodology for quality analyses described in Habernicht et al., 2002. Crop Sci. 42: 1396-1403.

² 1997 locations: Bozeman, Havre, Huntley, Conrad. 1998 locations: Bozeman, Havre, Moccasin, Conrad. 1999 locations: Bozeman, Havre, Moccasin, Huntley. 2000 locations: Bozeman, Havre, Huntley, Conrad.

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved - OMB No. 0581-00

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S) Montana Agricultural Experiment Station	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or RD No., City, State, and Zip Code) 202 Linfield Hall Montana State University Bozeman, MT 59717	PVPO NUMBER 2003.00290
	VARIETY NAME BigSky
	TEMPORARY OR EXPERIMENTAL DESIGNATION MT 9432

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g. or) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

1=Common

2=Durum

3=Club

4=Other (SPECIFY):

2. VERNALIZATION:

1=Spring

2=Winter

3=Other (SPECIFY):

3. COLEOPTILE ANTHOCYANIN:

1=Absent

2=Present

4. JUVENILE PLANT GROWTH:

1=Prostrate

2=Semi-erect

3=Erect

5. PLANT COLOR (boot stage):

1 = Yellow-Green

2 = Green

3 = Blue-Green

6. FLAG LEAF (boot stage):

1 = Erect

2 = Recurved

1 = Not Twisted

2 = Twisted

7. EAR EMERGENCE:

Number of Days Earlier Than Tiber

Number of Days Later Than Judith

8. ANTHER COLOR:

☐ 1

1 = Yellow

2 = Purple

9. PLANT HEIGHT (from soil to top of head, excluding awns):

☐ 03cm Taller Than Judith☐ 01cm Shorter Than Tiber

* Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

10. STEM:

A. ANTHOCYANIN

☐ 1

1 = Absent

2 = Present

B. WAXY BLOOM

☐ 2

1 = Absent

2 = Present

C. HAIRINESS (last internode of rachis)

☐ 1

1 = Absent

2 = Present

D. INTERNODE (SPECIFY NUMBER)

☐ 1

1 = Hollow

2 = Semi-solid

3 = Solid

E. PEDUNCLE

☐ 2

1 = Absent

2 = Present

☐ 29

cm Length

11. HEAD (at Maturity):

A. DENSITY

☐ 2

1 = Lax

3 = Dense

2 = Middense

B. SHAPE

☐ 1

1 = Tapering

3 = Clavate

2 = Strap

4 = Other (SPECIFY): _____

C. CURVATURE

☐ 2

1 = Erect

2 = Inclined

3 = Recurved

D. AWNEDNESS

☐ 4

1 = Awnless

3 = Awnletted

2 = Apically Awnletted

4 = Awned

12. GLUMES (at Maturity):

A. COLOR

☐ 1

1 = White

2 = Tan

3 = Other (SPECIFY): _____

C. BEAK

☐ 3

1 = Obtuse

2 = Acute

3 = Acuminate

B. SHOULDER

☐ 1

1 = Wanting

3 = Rounded

5 = Elevated

2 = Oblique

4 = Square

6 = Apiculate

D. LENGTH

☐ 3

1 = Short

(ca. 7mm)

3 = Long (ca. 9mm)

2 = Medium

(ca. 8mm)

12. GLUMES (at Maturity) *Continued*:

E. WIDTH

- ☒ 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm)
3 = Wide (ca. 4mm)

13. SEED:

A. SHAPE

- ☒ 1 = Ovate 2 = Oval 3 = Elliptical

B. CHEEK

- ☒ 1 = Rounded 2 = Angular

E. Color

- ☒ 1 = White 2 = Amber 3 = Red
4 = OTHER (Specify)

F. TEXTURE

- ☒ 1 = Hard 2 = Soft

C. BRUSH

- ☒ 1 = Short 2 = Medium 3 = Long

- ☒ 1 = Not Collared 2 = Collared

D. CREASE

- ☒ 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

- ☒ 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

G. PHENOL REACTION (*see instructions*):

- ☒ 1 = Ivory 2 = Fawn
3 = Light Brown 4 = Dark Brown
5 = Black

14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

- ☒ Stem Rust (*Puccinia graminis* f. sp. *tritici*)
Races TPMK, RCRS

- ☒ Stripe Rust (*Puccinia striiformis*)

- ☐ Tan Spot (*Pyrenophora tritici-repentis*)

- ☐ Halo Spot (*Selenophoma donacis*)

- ☐ *Septoria nodorum* (Glume Blotch)

- ☐ *Septoria avenae* (Speckled Leaf Disease)

- ☐ *Septoria tritici* (Speckled Leaf Blotch)

- ☐ Scab (*Fusarium* spp.)

- ☐ Leaf Rust (*Puccinia recondita* f. sp. *tritici*)

- ☐ Loose Smut (*Ustilago tritici*)

- ☐ Flag Smut (*Urocystis agropyri*)

- ☐ Common Bunt (*Tilletia tritici* or *T. laevis*)

- ☐ Dwarf Bunt (*Tilletia controversa*)

- ☐ Karnal Bunt (*Tilletia indica*)

- ☐ Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)

- ☐ "Snow Molds"

14. Disease (Continued) (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

- | | |
|---|---|
| <input type="checkbox"/> 0 "Black Point" (Kernel Smudge) | <input type="checkbox"/> 3 Common Root Rot (<i>Fusarium</i> , <i>Cochliobolus</i> and <i>Bipolaris</i> spp.) <i>Fusarium crown rot</i> |
| <input type="checkbox"/> 0 Barley Yellow Dwarf Virus (BYDV) | <input type="checkbox"/> 0 Rhizoctonia Root Rot (<i>Rhizoctonia solani</i>) |
| <input type="checkbox"/> 0 Soilborne Mosaic Virus (SBMV) | <input type="checkbox"/> 0 Black Chaff (<i>Xanthomonas campestris</i> pv. <i>translucens</i>) |
| <input type="checkbox"/> 0 Wheat Yellow (Spindle Streak) Mosaic Virus | <input type="checkbox"/> 0 Bacterial Leaf Blight (<i>Pseudomonas syringae</i> pv. <i>syringae</i>) |
| <input type="checkbox"/> 1 Wheat Streak Mosaic Virus (WSMV) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> Other (SPECIFY) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> Other (SPECIFY) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> Other (SPECIFY) | <input type="checkbox"/> Other (SPECIFY) |

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

- | | |
|---|--|
| <input type="checkbox"/> 1 Hessian Fly (<i>Mayetiola destructor</i>)
<i>Great Plains</i> | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 1 Stem Sawfly (<i>Cephus</i> spp.) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 0 Cereal Leaf Beetle (<i>Oulema melanopa</i>) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 1 Russian Aphid (<i>Diuraphis noxia</i>) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 0 Greenbug (<i>Schizaphis graminum</i>) | <input type="checkbox"/> Other (SPECIFY) |
| <input type="checkbox"/> 0 Aphids | <input type="checkbox"/> Other (SPECIFY) |

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS

Exhibit D**Additional Description of BigSky Wheat**

BigSky is a high-yielding hard red winter wheat cultivar with medium maturity, good foliar disease resistance, and dual purpose (bread & Asian noodle) end-use quality. BigSky was released in Montana based on a superior combination of high grain yield, high test weight, and high grain protein. BigSky is similar to Tiber in many respects with broad adaptation, good winter hardiness, high test weight, and stiff straw. Mean grain yield and agronomic characteristics of BigSky in trials conducted from 1996 to 2001 is shown in Table D1. Mean milling and baking data for BigSky and check cultivars is shown in Table D2. Asian noodle quality of BigSky has been previously described (Table B3).

Supplement to Exhibit D

Table D1. Mean grain yield and agronomic characteristics of BigSky and check cultivars in multiple Montana field trials from 1996 to 2001. Winter survival and lodging data collected only in environments with differential expression of the trait.

Cultivar	Grain yield	Test weight	Heading date	Plant height	Winter survival	Lodging	Grain protein
	bu/ac	lb/bu	days ¹	inches	%	%	%
BigSky	57.0	61.5	163	32.0	67	12	13.6
Tiber	56.5	61.1	164	32.4	61	9	13.5
Judith	58.9	59.3	159	30.8	62	11	13.2
Neeley	58.5	60.3	164	30.9	61	21	12.8
NuWest	57.3	60.5	163	30.6	65	26	13.2
LSD (5%)	1.4	0.3	3	0.4	ns ²	ns ²	0.2
# environ.	91	90	47	87	15	7	89

¹ Days from January 1.

² Non-significant difference among cultivars by F-test in ANOV.

Table D2. Mean milling and baking characteristics of BigSky and check cultivars in multiple Montana field trials from 1996 to 2000.

Cultivar	Flour yield	Flour ash	Bake water absorption	Loaf volume
	%	%	%	cc
BigSky	65.8	0.33	74.4	997
Tiber	65.9	0.32	72.6	991
Judith	68.9	0.37	73.8	1036
Neeley	66.4	0.35	73.0	991
NuWest	67.2	0.35	72.8	1008
LSD (5%)	0.8	0.01	1.3	28
# environments	20	20	20	20

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) <i>Montana Agricultural Experiment Station</i>	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER <i>MT9432</i>	3. VARIETY NAME <i>Big Sky</i>
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) <i>202 Linfield Hall Montana State University Bozeman, MT 59717</i>	5. TELEPHONE (Include area code) <i>406-994-3683</i>	6. FAX (Include area code) <i>406-994-6579</i>
7. PVPO NUMBER <i>200300290</i>		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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